



(19)

(11) Publication number:

09197452 A

Generated Document.

## PATENT ABSTRACTS OF JAPAN

(21) Application number: 08004500

(51) Intl. Cl.: G02F 1/35 G02F 1/35 H04B 10/17 H04B 10/16

(22) Application date: 16.01.96

(30) Priority:

(43) Date of application  
publication: 31.07.97

(84) Designated contracting  
states:

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### (54) OPTICAL FIBER COMMUNICATION SYSTEM

(57) Abstract:

**PROBLEM TO BE SOLVED:** To furthermore extend the span length of a very long span communication system for sending excitation light from both transmitting and receiving ends to an optical fiber amplifier on an optical fiber transmission line.

**SOLUTION:** Since an output from an exciting semiconductor laser has an upper limit, 2nd excitation light shorter than the wavelength of 1st excitation light by the Ramon shift distance of an optical fiber transmission line 41 to 43 is inputted from both the transmitting and receiving ends together with the 1st excitation light. The 2nd excitation light is shifted to the 1st wavelength by a Raman scattering effect during the transmission of the transmission line 41 to 43 and the power of the 1st excitation light is increased, so that the span length can be furthermore extended.

